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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/606,800	06/27/2003	Sun Geol Hong	049128-5123	5889
9629	7590	06/14/2005	EXAMINER	
MORGAN LEWIS & BOCKIUS LLP 1111 PENNSYLVANIA AVENUE NW WASHINGTON, DC 20004			CALEY, MICHAEL H	
			ART UNIT	PAPER NUMBER
			2871	

DATE MAILED: 06/14/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/606,800

Applicant(s)

HONG ET AL.

Examiner

Michael H. Caley

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 March 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 June 2003 is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 2, 4, 8, 9, and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Crosby (U.S. Patent No. 4,357,061) in view of Ernstoff et al. (U.S. Patent No. 4,006,968 "Ernstoff").

Regarding claims 1 and 8, Crosby discloses a liquid crystal display device and method of fabricating comprising:

- a liquid crystal display panel (Figure 1 element 12) having a plurality of liquid crystal cells (Figure 1 element 56);

- a printed circuit board (Figure 1 element 14) having a drive circuit (Figure 1 element 16) mounted thereon to drive the liquid crystal display panel;

- a supporter main (Figure 1 element 32) for supporting the liquid crystal display panel;

- at least one hole (Figure 1 element 96) formed in the printed circuit board; and

- at least one projected part (Figure 1 element 34) protruding from the supporter main,

wherein the projected part is inserted into the hole to affix the printed circuit board to the supporter main (Figure 9 elements 32, 34, and 16).

Crosby fails to disclose the liquid crystal display panel as having the plurality of liquid crystal cells as arranged in a matrix configuration. Ernstoff, however, teaches such a configuration as advantageous to realize a color display by presenting component primary colors adjacently (abstract).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to arrange the liquid crystal cells disclosed by Crosby in a matrix configuration. One would have been motivated to arrange the liquid crystal cells accordingly to benefit from the increased versatility of a matrix array cell arrangement, such as the ability to display diverse images beyond those of designed electrodes and to display color images (Figure 4).

Regarding claims 2 and 9, Crosby discloses all of the proposed limitations except for an explicit teaching of the diameter of the projected part as being larger than a minor diameter of the hole by 0.02-0.05 mm. Crosby, however, discloses a fastening mechanism in which a diameter of the projected part is inherently larger than a diameter of the hole (Figure 9) so that the circuit board and additional components may be held by the posts in the latched position (Column 6 lines 17-46).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have constructed the projected part to have a diameter larger than a diameter of the hole by about 0.02-0.05 mm in the display device disclosed by Crosby. Such a selection of

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diameter difference is considered to be an engineering expediency according to a results-effective variable preference to optimize the difference in diameter for a particular size of the circuit board. For example, one would have been motivated to scale the size of the fastening assembly according to the required strength of the fastener for mechanically stabilizing the circuit board and supporter main assembly.

Regarding claims 4 and 11, Crosby discloses the projected part as including a plurality of protrusions separated from each other by a first gap (Figure 9 element 86).

Claims 3, 5-7, 10, and 12-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Crosby in view of Ernstoff and in further view of Lee (U.S. Patent No. 6,105,215).

Regarding claims 3, 5, 7, 10, 12, and 14 Crosby as modified by Ernstoff fails to disclose the hole as having an elliptical, non-circular shape. Lee, however, teaches an upper hole of a stacked assembly of plates with holes as having an elliptical shape to compensate for tolerances in alignment with the lower holes (Figure 2 element 105; Column 3 lines 26-31). Lee teaches the elliptical upper hole as compatible with a fastener (Figure 2 element 20) analogous to the projected part disclosed by Crosby.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have constructed the hole formed in the printed circuit board disclosed by Crosby to have an elliptical shape. Crosby discloses the hole in the circuit board as the topmost in a series of holes in multiple plates similar to the topmost elliptical holes taught by Lee. One would have

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been motivated to form such holes as ellipses to facilitate easier alignment between the circuit board and other plates (Crosby: Figure 1 elements 36, 16, and 38) and to compensate for tolerances in alignment with the lower holes (Lee: Column 3 lines 26-31).

Regarding claims 6 and 13, Crosby as modified by Ernstoff fails to disclose the first gap as extending along a direction parallel to a major diameter of the elliptical shaped hole. Lee, however, teaches such an arrangement to compensate for tolerances in alignment with the lower holes (Figure 2 element 105; Column 3 lines 26-31).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have constructed the gap to extend along a direction parallel to a major diameter of the elliptically shaped hole in the display device disclosed by Crosby. One would have been motivated to form the gap and major axis accordingly to compensate for tolerances in alignment with the lower holes (Lee: Column 3 lines 26-31).

Response to Arguments

Applicant's arguments with respect to claims 1-14 have been considered but are moot in view of the new ground(s) of rejection.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael H. Caley whose telephone number is (571) 272-2286. The examiner can normally be reached on M-F 8:30 a.m. - 5:00 p.m..

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Kim can be reached on (571) 272-2293. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Michael H. Caley

June 10, 2005



mhc



DUNG T. NGUYEN
PRIMARY EXAMINER